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ABSTRACT

Building on the assumption that there is cognitive organization to social abilities, two studies analyzed stability and change of this organization in children. The first study focused on children who attended the first year and second year of nursery school, and the first year of elementary school. The second study focused on those children who attended the second year of nursery school then the first year of elementary school. In the first study, each child went through a triple evaluation, which was repeated in the second study, yielding results regarding: (1) cognitive abilities; (2) adaptive behaviors; and (3) playful activities displayed on the playground. The findings of both studies point in the same direction. Regarding the second year of nursery school, the factorial analysis highlights a general factor as well as a social intelligence factor. In the first year of nursery school and in the first year of elementary school, the factorial analysis highlights two factors: a cognitive-practical factor and a social intelligence factor. The findings are interpreted with respect to the institutional constraints demanding that children use their cognitive abilities, which may enable them to solve adaptive tasks prompted by entry in the nursery school and then in elementary school. (SD)

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# SCHOLASTIC ADAPTATION AND SOCIO-COGNITIVE ABILITIES OF CHILDREN BETWEEN 3 AND 7 YEARS OF AGE

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## INTRODUCTION

Social ability may be defined as the aptitude to behave in a socially appropriate way in different situations (Schneider, 1993). However, a definition that insists on the acceptability of behaviour in given situations only takes into account the social conformism of the individual that performs the behaviours (Oppenheimer, 1989). It therefore seems necessary to complete the definition by integrating into it the socio-cognitive abilities an individual may mobilise when he has to act in common and share meanings with others (Bruner, 1990).

Greenspan and Granfield (1992) proposed a general competence model in which the practical and social intelligences form the intellectual aspects of the social ability. Practical intelligence designates the capacity of behaving like an independent individual in daily activities : personal care, work, leisure, etc...Social intelligence designates the capacity of planning one's action depending on social expectations, and on the basis of a more or less relevant interpretation of the behaviour of others.

This model provides a theoretical frame that enables us to understand « how normally developing individuals acquire and demonstrate social competence » (Siperstein, 1992). But it also permits to evaluate the role of situations when these individuals use their socio-cognitive abilities. Indeed, the cognitive organisation of social competences seems to depend on numerous factors. Thus we have demonstrated that it is sensitive to the cultural background (Pry, Guillain & Foxonet, 1996).

The studies presented here concern the organisation and reorganisation of the socio-cognitive abilities of children during their inschooling. Indeed, we make the assumption that these changes depend, at least partially, on institutional constraints that demand of the child that it uses its cognitive abilities in order to face the adaptive tasks imposed on him when joining first the nursery school, and then elementary school.

## METHODOLOGY

*Subjects*

The children (n = 120) who took part in the first study have been divided into three groups : 40 children attending the first year of nursery school (PSM - average age : 3,3 years old ; minimum-maximum : 2,10 – 4,2 years old) ; 40 children attending the second year of nursery school (MSM – average age : 4,4 years old ; minimum-maximum : 3,9 – 5,0 years old) ; 40 children attending the first year of elementary school (CP – average age : 6,5 years old ; minimum-maximum : 6,1 – 7,1 years old). These three groups were rigorously matched according to three variables : sex (20 boys and 20 girls) ; cultural background (autochthones :

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29 / immigrants : 11) and socio-professional category of the family head (CSP 1 : 31 / CSP 2 : 9).

The children (n = 54) who took part in the second study have been seen twice : in middle section of nursery school (MSM – average age : 4,4 years old ; minimum-maximum : 3,9 – 5,0 years old) and in the first year of elementary school (CP – average age : 6,6 years old ; minimum-maximum : 6,1 – 7,3 years old). The group is composed of : boys (25) / girls (29) ; autochthones (29) / immigrants (25) ; CSP 1 (45) / CSP 2 (9).

*Procedure*

Each child went through a triple evaluation. This evaluation was repeated for children who took part in the second study (MSM – CP). The three evaluations consisted of the following :

1. Evaluation of the child's cognitive abilities using the K.ABC (Kaufman & Kaufman, 1983). Three scores were obtained relating to achievement, sequential and simultaneous processes.

2. Evaluation of the child's « practical intelligence » and of his level of adaptive behaviour according to the Vineland Scale (*Vineland Adaptive Behavior Scale* : Sparrow, Balla & Cicchetti, 1984). We applied the scale during the course of a semi-directive interview with an adult, a parent or a teacher, who knew the child well. Three scores were obtained regarding communication, daily living skills and socialization.

3. Evaluation of the child's « social intelligence » based on observation of his playful activities in a playground (20 minutes under permanent observation). The coding scale (Table 1) consists of 12 categories of games defined by the combination of two criteria : a cognitive criterion (sensori-motor / symbolic / rules) and a social participation criterion (solitary / parallel / in group). For each child, a participation score was calculated for the playful activities in group (T1), and a score corresponding to playful activities initiated by the child (T2). The last score evaluates the child's participation in activities of pretend play in group (T3).

*Statistical analysis*

A factor analysis in principal axes was carried out on the nine variables. The Kaiser's criteria (eigenvalue superior to 1) has been chosen. For each group, the matrix retained is the one of factors without rotation.

## RESULTS

*First study*

In Table 2 we present the results of the factor analyses regarding the three groups : PSM, MSM, and CP. For each, two principal factors suffice to account for the correlations noticed between the nine variables.

1. For the first year of nursery school (PSM), Factor 1 may be interpreted as a cognitivo-practical factor (K.ABC and Vineland ABS). Factor 2 can be interpreted as a social intelligence factor (playful activities).

2. For the second year of nursery school (MSM), Factor 1 is a general factor which saturates the nine variables (playful activities, Vineland ABS and K.ABC). Factor 2 may be interpreted as a social intelligence factor (playful activities).

3. For the first year of elementary school (CP), Factor 1 may be interpreted as a cognitivo-practical factor extended to collective pretend play. Factor 2 may again be interpreted as a social intelligence factor.

*Second study*

Table 3 shows the results of the factor analyses with respect to our group of the 54 children evaluated in the second year of nursery school (MSM) and in the first year of elementary school (CP). The results confirm those that have been obtained in the first study (by transversal method). In MSM and CP, two main factors are again sufficient to account for the correlations noticed between the nine variables.

1. In the second year of nursery school (MSM), Factor 1 is a general factor : the saturation coefficients are all positive and significant ($p < .01$, with the exception of the coefficient corresponding to the score for simultaneous mental processes). Factor 2 may be interpreted as a social intelligence factor since it saturates the playful activities while being clearly differentiated from the other variables.

2. In the first year of elementary school, this organisation of the socio-cognitive abilities modifies itself. Factor 1 may again be interpreted as a cognitivo-practical factor (K.ABC and Vineland ABS) and, as before, Factor 2 may be interpreted as a social intelligence factor (playful activities).

## CONCLUSION

For each group and for each age group, an exploratory factor analysis highlights the same bi-factorial structure. Factor 1 corresponds to more or less wide socio-cognitive abilities and Factor 2 can be interpreted as a social intelligence factor.

The only differences existing between the groups (PSM, MSM and CP) lie within Factor 1, as it is general factor in MSM and a more or less wide cognitivo-practical factor in PSM and CP. These modifications seem to be compatible with a developmental sequence such as : differentiation – dedifferentiation – redifferentiation.

When the institutional constraints are strong and new, as in the case of a child joining first the nursery school (PSM) and then the elementary school (CP), the cognitive abilities are mobilised in a almost exclusive way by the child's adaptive behaviour. Hence the observed differentiation, in the socio-cognitive abilities, the practical intelligence (Vineland ABS) and the social intelligence (playful activities).

However, when a child has solved a certain number of problems emerging from the novelty of the institutions (MSM), the cognitive abilities can be mobilised at the same time by his adaptive behaviour (Vineland ABS) and by the playful activities. Hence the process of dedifferentiation observed in the second year of nursery school and the general factor revealed by the factorial analysis (playful activities, Vineland ABS and K.ABC).

We still have to determine to which extent institutional constraints and ontogenetic transformations of cognitive mechanisms can explain these modifications. We still wonder if these modifications are a consequence or the for the possibility of scholarly learning.

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- Solitary play :
  - Sensori-motor ..... 1
  - Symbolic ..... 2

- Simultaneous or parallel play
  (similar activities without common aim or coordination)..... 3

- Group play without cooperation :
  - Demanding the sharing of a space or an object
    (ex. : to swing in turn) ..... 4
  - To do the same thing together (often by imitation) :
    - Motor play ..... 5
    - Symbolic play..... 6

- Group play with supplementary or cooperative roles :
  - Motor play (ex. : chasing, building together)..... 7
  - Symbolic play :
    - Motor play with or without object
      (ex. : pretend to fight)..... 8
    - Sociodramatic play (social roles)..... 9

- Rules games :
  - Solitary motor game (ex. : play hopscotch alone)..... 10
  - Collective motor game (ex. : football, hide-and- seek, knuckle-bones, etc.)..... 11
  - Collective symbolic game (ex. : to play footballpretending to be a famous player)..... 12

**Table 1. Categories of play**

| | PSM | | MSM | | CP | |
|---|---|---|---|---|---|---|
| | Factor 1 | Factor 2 | Factor 1 | Factor 2 | Factor 1 | Factor 2 |
| T1 | -.243 | .822 | .549 | .725 | .148 | .825 |
| T2 | -.198 | .785 | .622 | .429 | .141 | .600 |
| T3 | -.255 | .680 | .527 | .485 | .534 | .504 |
| COM | .822 | .044 | .618 | -.578 | .786 | -.181 |
| AVQ | .554 | .294 | .418 | -.199 | .672 | -.082 |
| SOC | .556 | .319 | .450 | -.229 | .571 | -.308 |
| SEQ | .658 | .079 | .727 | -.182 | .324 | -.087 |
| SIM | .661 | .007 | .453 | -.150 | .560 | -.137 |
| CONN | .710 | .133 | .803 | -.221 | .716 | .004 |
| Eigenvalue | 2.83 | 1.97 | 3.10 | 1.47 | 2.65 | 1.45 |
| %total inertia | .314 | .219 | .345 | .164 | .295 | .162 |
| %commonvariance | .578 | .422 | .556 | .444 | .624 | .376 |

**Table 2. Factor Matrix**

**(PSM = 40 children ; MSM = 40 children ; CP = 40 children)**

| | MSM | | CP | |
|---|---|---|---|---|
| | Fator 1 | Factor 2 | Factor 1 | Factor 2 |
| T1 | .438 | .694 | -.054 | .710 |
| T2 | .518 | .599 | .008 | .697 |
| T3 | .534 | .465 | .222 | .671 |
| COM | .724 | -.557 | .899 | -.118 |
| AVQ | .504 | -.340 | .674 | -.045 |
| SOC | .533 | -.397 | .587 | -.264 |
| SEQ | .651 | -.043 | .500 | -.086 |
| SIM | .207 | -.085 | .607 | .088 |
| CONN | .759 | -.041 | .698 | .237 |
| Eigenvalue | 2.85 | 1.651 | 2.765 | 1.597 |
| % total inertia | .317 | .183 | .307 | .177 |
| %Common variance | .545 | .455 | .633 | .367 |

**Table 3. Factor matrix**
**(MSM and CP = 54 children)**

*SUMMARY There is cognitive organization to social abilities. Two studies are presented that analyse stability and change of this organization in children aged 3 to 7 years. The first study (using a transversal method) focused on children who attend the first year of nursery school (n=40), the second year of nursery school (n=40) and the first year of elementary school (n=40). The second study (longitudinal method) focused on children who attend the second year of nursery school then the first year of elementary school (n=54). In the first study, each child went through a triple valuation, and in the second study the valuation was repeated yielding results regarding : 1) Cognitive abilities (K.ABC : achievement, sequential and simultaneous processes). 2) Adaptive behaviors (Vineland ABS : communication, daily living skills, socialization). 3) Playful activities displayed on the playground during twenty minutes. The results of both studies point in the same direction : 1) Regarding the second year of nursery school, the factorial analysis hightlights a general factor as well as a social intelligence factor (playful activities). 2) In the first year of nursery school and in the first year of elementary school, the factorial analysis hightlights two factors : a cognitivo-practical factor (K.ABC and Vineland ABS) and a social intelligence factor (playful activities). The results are interpreted with respect to the institutional constraints demanding that the child uses his cognitive abilities which may enable him to solve adaptive tasks prompted by his entry in the nursery school and then in elementary school.*

*RESUME Il existe une organisation cognitive de la compétence sociale. Deux recherches analysent cette organisation : stabilité et changement chez des enfants de 3 à 7 ans. La première recherche (méthode transversale) porte sur des enfants qui sont en première année de l'école maternelle (n=40), en second année de l'école maternelle (n=40) et en première année de l'école élémentaire (n=40). La seconde recherche (méthode longitudinale) porte sur des enfants qui sont en second année de l'école maternelle puis en première année de l'école élémentaire (n=54). Chaque enfant a fait l'objet d'une triple évaluation. Cette évaluation est répétée, à deux ans d'intervalle, dans la seconde recherche. 1) Compétences cognitives (K-ABC : connaissances, processus séquentiels et simultanés). 2) Comportements adaptatifs (Vineland ABS = communication, aptitudes dans la vie quotidienne, socialisation). 3) Activités ludiques observées, pendant 20 minutes, dans la cour de récréation. Les résultats de ces deux recherches vont dans le même sens. 1) Pour la seconde année de l'école maternelle, l'analyse factorielle dégage un facteur général et un facteur d'intelligence sociale (activités ludiques). 2) Pour la première année de l'école maternelle et pour la première année de l'école élémentaire, l'analyse factorielle dégage un facteur cognitivo-pratique (K. ABC et Vineland ABS) et un facteur d'intelligence sociale (activitiés ludiques). Ces résultats sont interprétés en fonction des contraintes institutionnelles qui exigent de l'enfant qu'il utilise ses compétences cognitives afin de résoudre les tâches adaptatives qui s'imposent à lui lors de son entrée à l'école maternelle, puis à l'école élémentaire.*

*ZUSAMMENFASSUNG Soziale Fähigkeit beruht auf kognitiver Organisation. Zwei Studien befassen sich mit dieser Organisation im Hinblick auf ihre Stabilität und Veränderung bei Kindern im Alter von drei und sieben Jahren. In der ersten Studie (Querschnittstudie) wurden Kinder im ersten Kindergartenjahr (n=40), im zweiten Kindergartenjahr (n=40) und im ersten Grundschuljahr (n=40) untersucht. Die zweite Studie (Längsschnittstudie) betrachtete Kinder im zweiten Kindergartenjahr und anschliessend im ersten Grundschuljahr (n=54). Jedes Kind wurde nach drei Gesichtspunkten beurteilt : Diese Beurteilung wurde in der zweiten Studie ebenfalls angewandt. 1) Kognitive Fähigkeiten (K-ABC : Lösungsfindung, sequentielle und simultane mentale Prozesse). 2) Adaptives Verhalten (Vineland ABS : Kommunikation, alltagsbezogene Fähigkeiten, Sozialisierung). 3) Feststellung der speilerischen Fähigkeiten während 20-minütiger Beobachtung auf dèm Spielplatz. Die Ergebnisse der beiden Studien deuten in dieselbe Richtung. 1) Im zweiten Kindergartenjahr ergibt die Faktorenanalyse einen allgemeinen Faktor und einen Faktor Soziale Intelligenz (spielerische Aktivitäten). 2) Im ersten Kindergartenjahr und im ersten Jahr des Grundschule ergibt die Faktorenanalyse zwei Faktoren : einen kognitivpraktischen Faktor (K-ABC und Vineland ABS) und einen Faktor « soziale Intelligenz » (spielerische Aktivitäten). Die Interpretation dieser Ergebnisse erfolgt in Abhängigkeit von den institutionellen Zwängen, die dem Kind die Anwendung seiner kognitiven Fähigkeiten auferlegen, welche es dazu befähigen, seine mit dem Eintritt in den Kindergarten unt anschliessend in die Grundschule verbundenen adaptiven aufgaben zu lösen.*